

**Corrected Appendix C. Itemized Capital and Operating Costs**  
Systems are sorted by Total Annualized Cost

Ventilation operation costs include ventilation fan energy, the cost of tempering ventilation air, and the cost of tempering infiltration attributable to mechanical ventilation.

| Boston homes with Gas Furnace/AC |          | annualized capital cost | annual operating cost |         |         |        | Total Annual Cost |
|----------------------------------|----------|-------------------------|-----------------------|---------|---------|--------|-------------------|
|                                  |          |                         | fan energy            | heating | cooling | total  |                   |
| multi-port supply                | \$ 650   | \$ 78                   | \$ 65                 | \$ 109  | \$ 15   | \$ 189 | \$ 267            |
| upgraded bath exhaust            | \$ 463   | \$ 60                   | \$ 64                 | \$ 130  | \$ 17   | \$ 212 | \$ 272            |
| single-port exhaust              | \$ 613   | \$ 74                   | \$ 65                 | \$ 132  | \$ 18   | \$ 215 | \$ 289            |
| multi-port exhaust               | \$ 1,125 | \$ 122                  | \$ 64                 | \$ 128  | \$ 17   | \$ 209 | \$ 331            |
| balanced heat recovery           | \$ 1,388 | \$ 164                  | \$ 126                | \$ 71   | \$ 9    | \$ 205 | \$ 369            |
| ICM forced-air supply            | \$ 1,550 | \$ 193                  | \$ 158                | \$ 109  | \$ 15   | \$ 282 | \$ 475            |
| MP supply, SP exhaust            | \$ 1,013 | \$ 129                  | \$ 127                | \$ 227  | \$ 28   | \$ 383 | \$ 512            |
| forced-air supply                | \$ 300   | \$ 77                   | \$ 469                | \$ 109  | \$ 15   | \$ 593 | \$ 670            |
| FA supply, SP exhaust            | \$ 663   | \$ 127                  | \$ 532                | \$ 227  | \$ 28   | \$ 787 | \$ 914            |

| Wash DC homes with Gas Furnace/AC |          | annualized capital cost | annual operating cost |         |         |        | Total Annual Cost |
|-----------------------------------|----------|-------------------------|-----------------------|---------|---------|--------|-------------------|
|                                   |          |                         | fan energy            | heating | cooling | total  |                   |
| upgraded bath exhaust             | \$ 463   | \$ 60                   | \$ 43                 | \$ 79   | \$ 20   | \$ 142 | \$ 202            |
| multi-port supply                 | \$ 650   | \$ 78                   | \$ 43                 | \$ 68   | \$ 18   | \$ 128 | \$ 206            |
| single-port exhaust               | \$ 613   | \$ 74                   | \$ 43                 | \$ 81   | \$ 20   | \$ 144 | \$ 219            |
| multi-port exhaust                | \$ 1,125 | \$ 122                  | \$ 42                 | \$ 78   | \$ 20   | \$ 140 | \$ 262            |
| balanced heat recovery            | \$ 1,388 | \$ 164                  | \$ 84                 | \$ 47   | \$ 11   | \$ 141 | \$ 305            |
| ICM forced-air supply             | \$ 1,550 | \$ 193                  | \$ 103                | \$ 68   | \$ 18   | \$ 189 | \$ 382            |
| MP supply, SP exhaust             | \$ 1,013 | \$ 129                  | \$ 85                 | \$ 153  | \$ 34   | \$ 271 | \$ 400            |
| forced-air supply                 | \$ 300   | \$ 77                   | \$ 306                | \$ 68   | \$ 18   | \$ 392 | \$ 468            |
| FA supply, SP exhaust             | \$ 663   | \$ 127                  | \$ 348                | \$ 153  | \$ 34   | \$ 534 | \$ 661            |

| Houston homes with Gas Furnace/AC |          | annualized capital cost | annual operating cost |         |         |        | Total Annual Cost |
|-----------------------------------|----------|-------------------------|-----------------------|---------|---------|--------|-------------------|
|                                   |          |                         | fan energy            | heating | cooling | total  |                   |
| upgraded bath exhaust             | \$ 463   | \$ 60                   | \$ 42                 | \$ 28   | \$ 74   | \$ 144 | \$ 204            |
| multi-port supply                 | \$ 650   | \$ 78                   | \$ 42                 | \$ 26   | \$ 67   | \$ 135 | \$ 213            |
| single-port exhaust               | \$ 613   | \$ 74                   | \$ 42                 | \$ 29   | \$ 75   | \$ 146 | \$ 220            |
| multi-port exhaust                | \$ 1,125 | \$ 122                  | \$ 41                 | \$ 27   | \$ 73   | \$ 142 | \$ 264            |
| balanced heat recovery            | \$ 1,388 | \$ 164                  | \$ 82                 | \$ 14   | \$ 36   | \$ 131 | \$ 295            |
| MP supply, SP exhaust             | \$ 1,013 | \$ 129                  | \$ 83                 | \$ 44   | \$ 115  | \$ 241 | \$ 370            |
| ICM forced-air supply             | \$ 1,550 | \$ 193                  | \$ 118                | \$ 26   | \$ 67   | \$ 211 | \$ 404            |
| forced-air supply                 | \$ 300   | \$ 77                   | \$ 351                | \$ 26   | \$ 67   | \$ 444 | \$ 521            |
| FA supply, SP exhaust             | \$ 663   | \$ 127                  | \$ 392                | \$ 44   | \$ 115  | \$ 551 | \$ 677            |

| Phoenix homes with Gas Furnace/AC |          | annualized capital cost | annual operating cost |         |         |        | Total Annual Cost |
|-----------------------------------|----------|-------------------------|-----------------------|---------|---------|--------|-------------------|
|                                   |          |                         | fan energy            | heating | cooling | total  |                   |
| upgraded bath exhaust             | \$ 463   | \$ 60                   | \$ 50                 | \$ 32   | \$ 71   | \$ 154 | \$ 214            |
| multi-port supply                 | \$ 650   | \$ 78                   | \$ 51                 | \$ 30   | \$ 64   | \$ 145 | \$ 223            |
| single-port exhaust               | \$ 613   | \$ 74                   | \$ 51                 | \$ 33   | \$ 72   | \$ 156 | \$ 230            |
| multi-port exhaust                | \$ 1,125 | \$ 122                  | \$ 50                 | \$ 31   | \$ 70   | \$ 152 | \$ 274            |
| balanced heat recovery            | \$ 1,388 | \$ 164                  | \$ 99                 | \$ 15   | \$ 37   | \$ 152 | \$ 316            |
| MP supply, SP exhaust             | \$ 1,013 | \$ 129                  | \$ 100                | \$ 51   | \$ 119  | \$ 269 | \$ 398            |
| ICM forced-air supply             | \$ 1,550 | \$ 193                  | \$ 202                | \$ 30   | \$ 64   | \$ 296 | \$ 489            |
| forced-air supply                 | \$ 300   | \$ 77                   | \$ 602                | \$ 30   | \$ 64   | \$ 696 | \$ 773            |
| FA supply, SP exhaust             | \$ 663   | \$ 127                  | \$ 651                | \$ 51   | \$ 119  | \$ 820 | \$ 947            |

**Corrected Appendix C. Itemized Capital and Operating Costs**  
Systems are sorted by Total Annualized Cost

Ventilation operation costs include ventilation fan energy, the cost of tempering ventilation air, and the cost of tempering infiltration attributable to mechanical ventilation.

| Wash DC homes with Electric Heat Pump |                   | annualized capital cost | annual operating cost |         |         |        | Total Annual Cost |
|---------------------------------------|-------------------|-------------------------|-----------------------|---------|---------|--------|-------------------|
| Ventilation System                    | installation cost |                         | fan energy            | heating | cooling | total  |                   |
| multi-port supply                     | \$ 650            | \$ 78                   | \$ 43                 | \$ 87   | \$ 18   | \$ 148 | \$ 225            |
| upgraded bath exhaust                 | \$ 463            | \$ 60                   | \$ 43                 | \$ 102  | \$ 20   | \$ 165 | \$ 225            |
| single-port exhaust                   | \$ 613            | \$ 74                   | \$ 43                 | \$ 104  | \$ 20   | \$ 167 | \$ 241            |
| multi-port exhaust                    | \$ 1,125          | \$ 122                  | \$ 42                 | \$ 100  | \$ 20   | \$ 162 | \$ 284            |
| balanced heat recovery                | \$ 1,388          | \$ 164                  | \$ 84                 | \$ 61   | \$ 11   | \$ 155 | \$ 319            |
| ICM forced-air supply                 | \$ 1,550          | \$ 193                  | \$ 100                | \$ 87   | \$ 18   | \$ 204 | \$ 397            |
| MP supply, SP exhaust                 | \$ 1,013          | \$ 129                  | \$ 85                 | \$ 196  | \$ 34   | \$ 314 | \$ 443            |
| forced-air supply                     | \$ 300            | \$ 77                   | \$ 296                | \$ 87   | \$ 18   | \$ 400 | \$ 477            |
| FA supply, SP exhaust                 | \$ 663            | \$ 127                  | \$ 337                | \$ 196  | \$ 34   | \$ 567 | \$ 693            |

| Houston homes with Electric Heat Pump |                   | annualized capital cost | annual operating cost |         |         |        | Total Annual Cost |
|---------------------------------------|-------------------|-------------------------|-----------------------|---------|---------|--------|-------------------|
| Ventilation System                    | installation cost |                         | fan energy            | heating | cooling | total  |                   |
| upgraded bath exhaust                 | \$ 463            | \$ 60                   | \$ 42                 | \$ 35   | \$ 74   | \$ 151 | \$ 212            |
| multi-port supply                     | \$ 650            | \$ 78                   | \$ 42                 | \$ 32   | \$ 67   | \$ 142 | \$ 220            |
| single-port exhaust                   | \$ 613            | \$ 74                   | \$ 42                 | \$ 36   | \$ 75   | \$ 153 | \$ 228            |
| multi-port exhaust                    | \$ 1,125          | \$ 122                  | \$ 41                 | \$ 35   | \$ 73   | \$ 149 | \$ 271            |
| balanced heat recovery                | \$ 1,388          | \$ 164                  | \$ 82                 | \$ 17   | \$ 36   | \$ 135 | \$ 299            |
| MP supply, SP exhaust                 | \$ 1,013          | \$ 129                  | \$ 83                 | \$ 56   | \$ 115  | \$ 253 | \$ 382            |
| ICM forced-air supply                 | \$ 1,550          | \$ 193                  | \$ 120                | \$ 32   | \$ 67   | \$ 219 | \$ 412            |
| forced-air supply                     | \$ 300            | \$ 77                   | \$ 355                | \$ 32   | \$ 67   | \$ 455 | \$ 531            |
| FA supply, SP exhaust                 | \$ 663            | \$ 127                  | \$ 396                | \$ 56   | \$ 115  | \$ 566 | \$ 693            |

| Phoenix homes with Electric Heat Pump |                   | annualized capital cost | annual operating cost |         |         |        | Total Annual Cost |
|---------------------------------------|-------------------|-------------------------|-----------------------|---------|---------|--------|-------------------|
| Ventilation System                    | installation cost |                         | fan energy            | heating | cooling | total  |                   |
| upgraded bath exhaust                 | \$ 463            | \$ 60                   | \$ 50                 | \$ 43   | \$ 71   | \$ 165 | \$ 225            |
| multi-port supply                     | \$ 650            | \$ 78                   | \$ 51                 | \$ 40   | \$ 64   | \$ 155 | \$ 233            |
| single-port exhaust                   | \$ 613            | \$ 74                   | \$ 51                 | \$ 44   | \$ 72   | \$ 167 | \$ 241            |
| multi-port exhaust                    | \$ 1,125          | \$ 122                  | \$ 50                 | \$ 42   | \$ 70   | \$ 162 | \$ 284            |
| balanced heat recovery                | \$ 1,388          | \$ 164                  | \$ 99                 | \$ 21   | \$ 37   | \$ 157 | \$ 321            |
| MP supply, SP exhaust                 | \$ 1,013          | \$ 129                  | \$ 100                | \$ 68   | \$ 119  | \$ 287 | \$ 416            |
| ICM forced-air supply                 | \$ 1,550          | \$ 193                  | \$ 208                | \$ 40   | \$ 64   | \$ 312 | \$ 505            |
| forced-air supply                     | \$ 300            | \$ 77                   | \$ 619                | \$ 40   | \$ 64   | \$ 724 | \$ 800            |
| FA supply, SP exhaust                 | \$ 663            | \$ 127                  | \$ 668                | \$ 68   | \$ 119  | \$ 855 | \$ 982            |